AMENDMENTS TO THE SPECIFICATION

Please replace the drawing with the attached drawings.

Please replace the abstract with the attached abstract.

Please amend the paragraph starting on page 11, line 6, as follows:

Mixtures of antioxidants are likewise suitable for use in the compositions. Known and commercial mixtures are, for example, mixtures comprising, as active ingredients, lecithin, L-(+)-ascorbyl palmitate and citric acid (for example ~~Oxynex®~~ OXYNEX® AP), natural tocopherols, L-(+)-ascorbyl palmitate, L-(+)-ascorbic acid and citric acid (for example ~~Oxynex®~~ OXYNEX® K LIQUID), tocopherol extracts from natural sources, L-(+)-ascorbyl palmitate, L-(+)-ascorbic acid and citric acid (for example ~~Oxynex®~~ OXYNEX® L LIQUID), DL-α-tocopherol, L-(+)-ascorbyl palmitate, citric acid and lecithin (for example ~~Oxynex®~~ OXYNEX® LM) or butylhydroxytoluene (BHT), L-(+)-ascorbyl palmitate and citric acid (for example ~~Oxynex®~~ OXYNEX® 2004).

Please amend the paragraph starting on page 11, line 19, as follows:

A further suitable antioxidant mixture can consist, for example, of, inter alia, emblicanin A, emblicanin B, punigluconin and pendunculagin, as described, for example, in WO 00/48551 under the name CAPROS™ (for example EMBLICA™ ~~Emblica™~~).

Please amend the paragraphs starting on page 13, line 31, and ending on page 15, line 13, as follows:

benzylidenecamphor derivatives, such as

- 3-(4'-methylbenzylidene)-dl-camphor (for example EUSOLEX® ~~Eusolex®~~ 6300),
- 3-benzylidenecamphor (for example MEXORYL® ~~Mexoryl®~~ SD),
- polymers of N-{(2 and 4)-[(2-oxoborn-3-ylidene)methyl]benzyl}acrylamide (CAS No. 113783-61-2, for example MEXORYL® ~~Mexoryl®~~ SW),
- N,N,N-trimethyl-4-(2-oxoborn-3-ylidenemethyl)anilinium methylsulfate (CAS No. 52793-97-2, for example MEXORYL® ~~Mexoryl®~~ SK) or
- α-(2-oxoborn-3-ylidene)toluene-4-sulfonic acid (CAS No. 56039-58-8, for example MEXORYL® ~~Mexoryl®~~ SL),

benzoyl- or dibenzoylmethanes, such as

- 1-(4-tert-butylphenyl)-3-(4-methoxyphenyl)propane-1,3-dione (for example EUSOLEX® ~~Eusolex®~~ 9020) or
- 4-isopropyldibenzoylmethane (for example EUSOLEX® ~~Eusolex®~~ 8020),

benzophenones, such as

- 2-hydroxy-4-methoxybenzophenone (for example EUSOLEX® ~~Eusolex®~~ 4360) or
- 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid and its sodium salt (for example UVINUL® ~~Uvinul®~~ MS-40),

methoxycinnamic acid esters, such as

- octyl methoxycinnamate (for example EUSOLEX® ~~Eusolex®~~ 2292) or
- isopentyl 4-methoxycinnamate, for example as a mixture of the isomers (for example NEO HELIOPAN® ~~Neo Heliopan®~~ E 1000),

salicylate derivatives, such as

- 2-ethylhexyl salicylate (for example EUSOLEX® ~~Eusolex®~~ OS),
- 4-isopropylbenzyl salicylate (for example MEGASOL® ~~Megasol®~~) or
- 3,3,5-trimethylcyclohexyl salicylate (for example EUSOLEX® ~~Eusolex®~~ HMS),

4-aminobenzoic acid and derivatives, such as

- 4-aminobenzoic acid,
- 2-ethylhexyl 4-(dimethylamino)benzoate (for example EUSOLEX® ~~Eusolex®~~ 6007) or
- ethoxylated ethyl 4-aminobenzoate (for example UVINUL® ~~Uvinul®~~ P25),

and further substances, such as

- 2-ethylhexyl 2-cyano-3,3-diphenylacrylate (for example EUSOLEX® ~~Eusolex®~~ OCR),
- 2-phenylbenzimidazole-5-sulfonic acid and potassium, sodium and triethanolamine salts thereof (for example EUSOLEX® ~~Eusolex®~~ 232),
- 3,3'-(1,4-phenylenedimethylene)bis(7,7-dimethyl-2-oxobicyclo[2.2.1]hept-1-ylmethanesulfonic acid and salts thereof (for example MEXORYL® ~~Mexoryl®~~ SX),
- 2,4,6-trianilino-(p-carbo-2'-ethylhexyl-1'-oxy)-1,3,5-triazine (for example UVINUL® ~~Uvinul®~~ T 150) or
- hexyl 2-(4-diethylamino-2-hydroxybenzoyl)benzoate (for example UVINUL® ~~Uvinul®~~ UVA Plus, BASF).

Please amend the paragraph starting on page 15, line 22, as follows:

Further suitable organic UV filters are, for example,

- 2-(2H-benzotriazol-2-yl)-4-methyl-6-(2-methyl-3-(1,3,3,3-tetramethyl-1-(trimethylsilyloxy)disiloxanyl)propyl)phenol (for example SILATRIZOLE® ~~Silatrizole®~~),
- 2-ethylhexyl 4,4'-[(6-[4-((1,1-dimethylethyl)aminocarbonyl)phenylamino]-1,3,5-triazine-2,4-diyl)diimino]bis(benzoate) (CAS No. 154702-15-5, for example UVASORB® ~~Uvasorb®~~ HEB),
- α-(trimethylsilyl)-ω-[trimethylsilyl)oxy]poly[oxy(dimethyl [and about 6% of methyl[2-[p-[2,2-bis(ethoxycarbonyl]vinyl]phenoxy]-1-methyleneethyl] and about 1.5% of methyl[3-[p-[2,2-

bis(ethoxycarbonyl)vinyl)phenoxy)propenyl) and from 0.1 to 0.4% of (methyl-hydrogen]silylene]] (n ≈ 60) (CAS No. 207 574-74-1, for example Parsol SLX),

- 2,2'-methylenebis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol) (CAS No. 103 597-45-1, for example Tinosorb M),
- 2,2´-(1,4-phenylene)bis(1H-benzimidazole-4,6-disulfonic acid, monosodium salt) (CAS No. 180 898-37-7, for example Neo Heliopan AP),
- 2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine (CAS No. 187 393-00-6, for example Tinosorb S) or
- 2,2'-(1,4-phenylene)bis(1H-benzimidazole-5-sulfonic acid) and potassium, sodium and triethanolamine salts thereof.

Please amend the paragraph starting on page 16, line 15, as follows:

Conceivable inorganic UV filters are those from the group consisting of titanium dioxides, such as, for example, coated titanium dioxide (for example EUSOLEX® ~~Eusolex®~~ T-2000, EUSOLEX® ~~Eusolex®~~ T-AQUA), zinc oxides (for example SACHTOTEC® ~~Sachtotec®~~), iron oxides and also cerium oxides. These inorganic UV filters are generally incorporated into the compositions in an amount of from 0.5 to 20% by weight, preferably from 2 to 10% by weight.

Please amend the paragraphs starting on page 23, line 3, and ending on page 43, line 15, as follows:

Example A – Protective action of RONACARE™ ~~RonaCare™~~ ectoin

Normal human keratinocytes which are left untreated or have been treated with a 2mM solution of RONACARE™ ~~RonaCare™~~ ectoin for 24 hours are subjected to a UV-A radiation dose of 30 J/cm^2 (wavelength of the UV-A radiation: 340-400 nm). It was previously found that this dose induces the cascade described above without influencing the living cell count. The cells are harvested 1 hour after irradiation (= maximum UV-A-induced second messenger formation). The release of the second messenger was determined.

The results are shown in Table 1 below:

Sample	Increase in second messenger [ng]
Untreated/unirradiated	6.01
Untreated/irradiated	12.90
Ectoin-treated/irradiated	5.65

Table 1 Release of second messenger in UV-A-irradiated skin

The experiment shows that RONACARE™ ~~RonaCare™~~ ectoin inhibits the UV-A-induced release of the second messenger. The above-mentioned cascade is interrupted by the reduction

in the concentration of second messenger. This enables harmful influences and damage to skin cells and collagen fibres owing to the expression of matrix metalloproteinases and pro-inflammatory genes to be avoided.

Example B – Protective action of RONACARE™ ectoin ~~**RonaCare™ectoin**~~

Example B1: Inhibition of UV-A-induced ceramide formation

The concentration of a second messenger (ceramide) in UVA-irradiated normal human keratinocytes which have either been pretreated with 1 mM RONACARE™ ~~RonaCare™~~ ectoin or are untreated compared with unirradiated keratinocytes is measured using a quantitative HPTLC method. (A) Un-pretreated control, (B) pre-incubated only with the cell medium for 24 hours, (C) pre-incubated with 1 mM RONACARE™ ~~RonaCare™~~ ectoin for 24 hours. The cells pre-treated in this way are irradiated with a single dose of UVA of 30 J/cm^2 (radiation source: Sellamed 24000). The cells are "harvested" 1 hour after irradiation, a lipid extraction is carried out, and the concentration of the second messenger is determined by quantitative HPTLC. Methodological details are given in Grether-Beck S et al., EMBO J 19: 5793-5800, 2000. Figure 1 shows the data for each of three independent experiments. The data are shown as histograms of ectoin (mM) against ceramide (ng). It is found that treatment of cells with 1 mM ectoin completely suppresses ceramide formation induced by UVA radiation.

Example B2: Inhibition of UV-A-induced AP-2 activation

The determination of the activation of transcription factor AP-2 is carried out with the aid of gel electrophoresis mobility shift assays (GEMSA). To this end, a nucleus extract (according to J.D. Dignam, P.L.Martin, B.S. Skastry, R.G.G. Roeder, Methods Enzymol 101 (1983) 582-598) of human keratinocytes which had previously been irradiated for 1 hour with 30 J/cm^2 of UV-A light is incubated in comparison with an unirradiated control with the consensus oligonucleotide sequence of ICAM-1 promoter (in accordance with G.G. Stade, G. Messer, G. Riethmüller, J.P. Johannson; Immunobiology 182 (1990) 79-87). The amount of bound AP-2 is subsequently determined by means of GEMSA. (A) Un-pretreated, unirradiated control, (B) pre-incubated with 1 mM RONACARE™ ~~RonaCare™~~ ectoin for 24 hours and irradiated with a single dose of 30 J/cm^2, or (C) pre-incubated only with the cell medium for 24 hours and irradiated with 30 J/cm^2. The data for two experiments are shown in Figure 2. The UVA irradiation results in activation of transcription factor AP-2 after UVA exposure. It is found that this activation can be suppressed virtually completely by pretreatment of the cells with 1 mM ectoin.

Example B3: Inhibition of UV-A-induced ICAM-1 expression

The expression of ICAM-1 is measured using differential reverse transcriptase PCR (RT-PCR) and the kit from Applied Biosystem. In order to take into account the normal variations in gene expression of skin cells, the ICAM-1 expression is compared with the housekeeping gene β-actin formed constitutively. Semiquantitative analysis of the RT-PCR is carried out by ion exchange chromatography using a UV spectrophotometer (A260). (A) Un-pretreated, irradiated control, (B) pre-incubated with 1 mM RONACARE™ ~~RonaCare™~~ ectoin for 24 hours and irradiated with a single dose of 30 J/cm^2, or (C) pre-incubated with 1 mM ectoin for 24 hours, unirradiated. Data obtained in two independent experiments are shown in Figure 3. The UVA radiation induces an increase in ICAM-1 expression. The pretreatment of keratinocytes with 1 mM ectoin can virtually completely eliminate ICAM-1 induction induced by UVA radiation at all points in time.

Example B4: Effect of ectoin on UVA radiation-induced formation of mitochondrial DNA mutations

Dermal human fibroblasts are cultivated in Eagle minimal medium. The cells are irradiated three times daily with 8 J/cm^2 of UVA on four successive days over a total of three weeks. The mt-DNA is then extracted and amplified using PCR. Further details on the method are described in detail in M. Berneburg, S. Grether-Beck, V. Kürten, Th. Ruzicka, K. Briviba, H. Sies, J. Krutmann, J Biol Chem 274 (1999) 15345-15349 and M. Berneburg, N. Gattermann, H. Stege, M. Grewe, K. Vogelsang, Th. Ruzicka, J. Krutmann, Photobiol. 66 (1997) 271-275. Figure 4 shows the agarose gel of the reference fragment duplicated by means of PCR for representation of the common deletion as an indication of extensive UV-A-induced DNA mutations in primary human skin fibroblasts. Pretreatment of the fibroblasts with 1 mM RONACARE™ ~~RonaCare™~~ ectoin prevented the formation of mt-DNA mutations, as can be seen from direct comparison.

Formulation Examples

Example 1 – Sunscreen gel

	Raw material % by wt.		INCI	
A	Sepigel 305	(1)	LAURETH-7, POLYACRYLAMIDE, C13-C14 ISOPARAFFIN	2.0
	Phenonip	(2)	PHENOXYETHANOL, BUTYLPARABEN, ETHYLPARABEN, PROPYLPARABEN, METHYLPARABEN	0.7
	Water, demineralised		AQUA (WATER)	30.0

B	RONACARE™ ~~RonaCare™~~ ectoin	(3)	ECTOIN	0.3
	Glycerol (87% extra pure)	(3)	GLYCERIN	2.0
	Water, demineralised		AQUA (WATER)	45.0
C	~~EUSOLEX® UV-Pearls™~~			
	EUSOLEX® UV-PEARLS™ OMC	(3)	AQUA (WATER), ETHYLHEXYL METHOXYCINNAMATE, SILICA, PVP, CHLORPHENESIN, BHT	20.0

Preparation:

For the preparation of phase A, Sepigel 305 is mixed intimately with water and preservative. Phase B is dissolved and incorporated into phase A. The ~~EUSOLEX® UV-Pearls™~~ EUSOLEX® UV-PEARLS™ OMC are added with stirring, and the pH adjusted to 5 using citric acid.

Notes:

Viscosity 14,000 mPas (Brookfield LV, spindle 4, 12 rpm) at 25°C.

Sources of supply:

(1) Seppic
(2) Nipa Laboratorien GmbH
(3) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~

Example 2 – Sunscreen lotion for sensitive skin

	Raw material		**INCI**	
	% by wt.			
A	EUSOLEX® T-S	(1)	TITANIUM DIOXIDE, ALUMINA, STEARIC ACID	10.0
	Arlacel P135	(2)	PEG-30 DIPOLYHYDROXYSTEARATE	2.0
	Cetiol A	(3)	HEXYL LAURATE	12.0
	Arlamol S 7	(2)	CYCLOMETHICONE, PPG-15 STEARYL ETHER	6.0
	Pecosil PS-100	(4)	DIMETHICONE COPOLYOL PHOSPHATE	0.5
B	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	0.3
	Magnesium sulfate	(1)	MAGNESIUM SULFATE	0.7
	Glycerol (87% extra pure)	(1)	GLYCERIN	3.0
	Titriplex III	(1)	DISODIUM EDTA	0.05
	Water, demineralised		AQUA (WATER)	44.75

C	~~EUSOLEX® UV-Pearls™~~ EUSOLEX® UV-PEARLS™ OMC	(1)	AQUA (WATER), ETHYLHEXYL METHOXYCINNAMATE, SILICA, PVP, CHLORPHENESIN, BHT	20.0
D	Phenonip	(5)	PHENOXYETHANOL, BUTYLPARABEN, ETHYLPARABEN, PROPYLPARABEN, METHYLPARABEN	0.7

Preparation:

Phase A is combined apart from the EUSOLEX® ~~Eusolex®~~ T-S and heated to 80°C. EUSOLEX® ~~Eusolex®~~ T-S is subsequently stirred in slowly. Phase B is heated to 75°C and slowly added with stirring to phase A. The ~~EUSOLEX® UV-Pearls™~~ EUSOLEX® UV-PEARLS™ OMC are then added at 40°C, and phase D is subsequently incorporated. Finally, the mixture is homogenised and cooled with stirring.

Notes:

Viscosity 6000 mPas (Brookfield LV, spindle 4, 60 rpm) at 25°C.

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~
(2) Uniqema
(3) Cognis GmbH
(4) Phoenix Chemical
(5) Nipa Laboratorien GmbH

Example 3 – Sunscreen lotion (W/O); SPF 16.7 / UVA PF 8.0

	Raw material **% by wt.**		**INCI**	
A	EUSOLEX® T-ECO	(1)	TITANIUM DIOXIDE, ALUMINA, SIMETHICONE	4.0
	EUSOLEX® OCR	(1)	OCTOCRYLENE	7.0
	Arlacel P135	(2)	PEG-30 DIPOLYHYDROXYSTEARATE	2.5
	Abil WE 09	(3)	POLYGLYCERYL-4 ISOSTEARATE, CETYL DIMETHICONE COPOLYOL, HEXYL LAURATE	2.5
	Crodafos CES	(4)	CETEARYL ALCOHOL, CETEARYL PHOSPHATE	1.0

	Ewalin 1751	(5)	PETROLATUM	3.0
	Cetiol 868	(6)	ETHYLHEXYL STEARATE	4.0
	Miglyol 812 N	(7)	CAPRYLIC/CAPRIC TRIGLYCERIDE	4.0
	Dow Corning 345	(8)	CYCLOMETHICONE	3.0
	Dow Corning 200 (100cs)	(8)	DIMETHICONE	2.0
	Paracera W 80	(9)	CERESIN (MICROCRYSTALLINE WAX)	0.5
	Propyl 4-hydroxybenzoate	(1)	PROPYLPARABEN	0.05
B	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	0.1
	RONACARE™ ~~RonaCare™~~ allantoin	(1)	ALLANTOIN	0.2
	1,2-Propanediol	(1)	PROPYLENE GLYCOL	3.0
	Sodium chloride	(1)	SODIUM CHLORIDE	0.5
	Methyl 4-hydroxybenzoate	(1)	METHYLPARABEN	0.15
	Water, demineralised		AQUA (WATER)	62.2
C	Sun Care Perf. D10316E PM perfume oil	(10)	PARFUM	0.3

Preparation:

Phase A is combined apart from the EUSOLEX® T-ECO and heated to 80°C. EUSOLEX® T-ECO is slowly stirred into the hot oil phase. Phase B is then heated to 80°C and slowly added to phase A with stirring. The mixture is carefully homogenised at 50-40°C in order to enable optimum dispersal of the particles of EUSOLEX® ~~Eusolex®~~ T-ECO. Phase C is then added at 40°C, and the mixture is cooled with stirring.

Notes:

Viscosity 11,800 mPas (Brookfield RVT, sp. C, 10 rpm) at 26°C.

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~
(2) Uniqema
(3) Degussa-Goldschmidt AG
(4) Croda GmbH
(5) H. Erhard Wagner GmbH
(6) Cognis GmbH
(7) Sasol Germany GmbH
(8) Dow Corning
(9) Paramelt
(10) Haarmann & Reimer GmbH

Example 4 – Sunscreen lotion (O/W); SPF 14.9 / UVA PF 3.9

	Raw material		INCI	
	% by wt.			
A	EUSOLEX® T-2000	(1)	TITANIUM DIOXIDE, ALUMINA, SIMETHICONE	5.0
	EUSOLEX® 2292	(1)	ETHYLHEXYL METHOXYCINNAMATE, BHT	5.0
	Emulium delta	(2)	GLYCERYL STEARATE, CETYL ALCOHOL, PEG-75 STEARATE, CETETH-20, STEARETH-20	3.3
	Eumulgin L	(3)	PPG-1-PEG-9 LAURYL GLYCOL ETHER	0.5
	SF 1318	(4)	DIISOSTEAROYL TRIMETHYLOLPROPANE SILOXY SILICATE	1.5
	Crodamol AB	(5)	C12-15 ALKYL BENZOATE	3.0
	Crodamol DOA	(5)	DIOCTYL ADIPATE	4.0
	Dow Corning 200 (100cs)	(6)	DIMETHICONE	2.0
B	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	0.1
	RONACARE™ ~~RonaCare™~~ allantoin	(1)	ALLANTOIN	0.2
	Pecosil PS-100	(7)	DIMETHICONE COPOLYOL PHOSPHATE	2.5
	1,3-Butanediol	(1)	BUTYLENE GLYCOL	2.5
	Water, demineralised		AQUA (WATER)	68.9
C	Salcare SC 96	(8)	PPG-1 TRIDECETH-6, POLYQUATERNIUM-37, PROPYLENE GLYCOL, DICAPRYLATE/DICAPRATE	0.47
D	Paragon	(9)	PROPYLENE GLYCOL, DMDM HYDANTOIN, METHYLPARABEN	0.73
	SUNSAFE L20013W perfume oil	(10)	PARFUM	0.3

Preparation:

Phase A is combined apart from the EUSOLEX® T-2000 and heated to 60°C. EUSOLEX® T-2000 is slowly incorporated into the molten oil phase. Phase B is heated to 60°C, then phase C is dispersed in with stirring, and subsequently phase A is stirred into phase B/C with vigorous stirring. The mixture is cooled with stirring, and phase D is added at 40°C. The mixture is subsequently homogenised (1 minute with the wand at setting II) and cooled to 25°C with stirring.

Notes:

pH = 4.3 at 23°C

Viscosity 7700 mPa s (Brookfield RVT, sp. C, 10 rpm) at 23°C.

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~
(2) Gattefossé GmbH
(3) Cognis GmbH
(4) GE Silicones Holland
(5) Croda GmbH
(6) Dow Corning
(7) Phoenix Chemical
(8) Allied Colloids GmbH
(9) Mcintyre Group, LTD.
(10) Haarmann & Reimer GmbH

Example 5 – Luxury night cream (W/O)

	Raw material % by wt.		INCI	
A	Liquid paraffin	(1)	PARAFFINUM LIQUIDUM (MINERAL OIL)	10.0
	Isolan PDI	(2)	DIISOSTEAROYL POLYGLYCERYL-3 DIISOSTEARATE	4.0
	Cutina HR	(3)	HYDROGENATED CASTOR OIL	0.4
	Paracera M	(4)	MICROWAX	0.2
	Cetiol 868	(3)	ETHYLHEXYL STEARATE	12.0
B	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	1.0
	Glycerol (87% extra pure)	(1)	GLYCERIN	3.0
	Preservative			q.s.
	Magnesium sulfate 1.05882 heptahydrate	(1)	MAGNESIUM SULFATE	1.0
	Water, demineralised		AQUA (WATER)	68.4

Preparation:

Phase A and phase B are warmed separately to 80°C. Phase B is added to phase A with stirring. The mixture is subsequently cooled and homogenised with stirring.

Notes:

Viscosity (23°C): 32,000 mPa.s (Brookfield RVT, spindle C, 5 rpm, Helipath)

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~

(2) Degussa-Goldschmidt AG

(3) Cognis GmbH

(4) Paramelt

Example 6 – Winter face cream (W/O)

	Raw material		INCI	
	% by wt.			
A	Liquid paraffin	(1)	PARAFFINUM LIQUIDUM (MINERAL OIL)	5.0
	Isolan PDI	(2)	DIISOSTEAROYL POLYGLYCERYL-3 DIISOSTEARATE	4.0
	Isopropyl palmitate	(3)	ISOPROPYL PALMITATE	8.0
	Beeswax bleached	(1)	CERA ALBA (BEESWAX)	1.0
	Cutina HR	(3)	HYDROGENATED CASTOR OIL	1.0
	Cetyl palmitate	(1)	CETYL PALMITATE	2.0
	Cetiol SN	(3)	CETEARYL ISONONANOATE	7.0
B	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	1.0
	Glycerol (87% extra pure)	(1)	GLYCERIN	3.0
	Preservative			q.s.
	Magnesium sulfate heptahydrate	(1)	MAGNESIUM SULFATE	1.0
	Water, demineralised		AQUA (WATER)	67.0

Preparation:

Phase A is warmed to 80°C. Phase B is then dissolved with stirring and slowly added to phase A with stirring. The mixture is subsequently homogenised and cooled with stirring.

Notes:

Viscosity (27°C): 16,000 mPa.s (Brookfield RVT, spindle C, 20 rpm, Helipath)

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~

(2) Degussa-Goldschmidt AG

(3) Cognis GmbH

Example 7 - Shampoo

	Raw material		INCI	
	% by wt.			
A	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	1.0
	Texapon NSO	(2)	SODIUM LAURETH SULFATE	34.0
	Tego Betain L 7	(3)	COCAMIDOPROPYL BETAINE	10.0
	Sodium chloride	(1)	SODIUM CHLORIDE	1.13
	Glycerol (87% extra pure)	(1)	GLYCERIN	2.0
	Water, demineralised		AQUA (WATER)	51.87

Preparation:

Phase A is weighed out and stirred until dissolved homogeneously.

Notes:

pH (25°C): 6.30

Viscosity (28°C): 1700 mPa.s (Brookfield RVT, spindle B, 10 rpm, Helipath)

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~

(2) Cognis GmbH

(3) Degussa-Goldschmidt AG

Example 8 – Luxury body care (O/W)

	Raw material		INCI	
	% by wt.			
A	Tego Care 215, pellets	(1)	GLYCERYL STEARATE, CETEARETH-15	2.0
	Avocado oil	(2)	PERSEA GRATISSIMA	3.0
	Miglyol 812 N	(3)	CAPRYLIC/CAPRIC TRIGLYCERIDE	3.0
	Abil 350	(1)	DIMETHICONE	0.5
	Lanette 18	(4)	STEARYL ALCOHOL	1.5
	Carbopol ETD 2050	(5)	CARBOMER	0.1
B	Glycerol (87% extra pure)	(6)	GLYCERIN	3.0
	RONACARE™ ~~RonaCare™~~ ectoin	(6)	ECTOIN	1.0
	Preservative			q.s.
	Water, demineralised		AQUA (WATER)	85.9

C	Sodium hydroxide solution, 10%	(6)	SODIUM HYDROXIDE	q.s.

Preparation:

Phases A and B are warmed separately to 80°C. Phase B is then added to phase A with stirring and homogenised. The mixture is subsequently neutralised and cooled with stirring.

Notes:

pH (25°C): 5.80

Viscosity (25°C): 28,000 mPa.s (Brookfield RVT, spindle C, 5 rpm, Helipath)

Sources of supply:

(1) Degussa-Goldschmidt AG
(2) Gustav Heess GmbH
(3) Sasol Germany GmbH
(4) Cognis GmbH
(5) BF Goodrich
(6) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~

Example 9 – Protective baby care (O/W)

	Raw material		**INCI**	
	% by wt.			
A	Liquid paraffin	(1)	PARAFFINUM LIQUIDUM (MINERAL OIL)	5.0
	Emulsogen SRO	(2)	RAPESEED OIL SORBITOL ESTERS	1.0
	Isopropyl palmitate	(3)	ISOPROPYL PALMITATE	6.0
	Jojoba oil	(4)	BUXUS CHINENSIS (JOJOBA OIL)	2.0
	Miglyol 812 N	(5)	CAPRYLIC/CAPRIC TRIGLYCERIDE	4.0
	Soya oil	(4)	GLYCINE SOJA (SOYBEAN OIL)	3.0
	Carbopol ETD 2001	(6)	CARBOMER	0.5
B	Hostapon CLG	(2)	SODIUM LAUROYL GLUTAMATE	0.6
	Titriplex III	(1)	DISODIUM EDTA	0.1
	Citric acid monohydrate	(1)	CITRIC ACID	0.03
	Glycerol (87% extra pure)	(1)	GLYCERIN	3.0
	Preservative			q.s.
	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	1.0
	Water, demineralised		AQUA (WATER)	73.07

C	Sodium hydroxide solution, 10%	(1)	SODIUM HYDROXIDE	0.7

Preparation:

Phases A and B are each stirred well. Phase B is then added to phase A with stirring and homogenised. The mixture is subsequently neutralised using phase C and stirred until ready.

Notes:

pH (25°C): 6.00

Viscosity (25°C): 27,000 mPa.s (Brookfield RVT, spindle C, 5 rpm, Helipath)

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~
(2) Clariant GmbH
(3) Cognis GmbH
(4) Gustav Heess GmbH
(5) Sasol Germany GmbH
(6) BF Goodrich

Example 10 - Sun complete (O/W)

	Raw material		**INCI**	
	% by wt.			
A	EUSOLEX® 2292	(1)	ETHYLHEXYL METHOXYCINNAMATE, BHT	4.0
	EUSOLEX® 4360	(1)	BENZOPHENONE-3	1.0
	Tego Care 215, pellets	(2)	GLYCERYL STEARATE, CETEARETH15	2.5
	Cetiol V	(3)	DECYL OLEATE	5.0
	Isopropyl palmitate	(3)	ISOPROPYL PALMITATE	5.0
	Abil 350	(2)	DIMETHICONE	0.5
	Lanette 18	(3)	STEARYL ALCOHOL	2.0
	Carbopol ETD 2050	(4)	CARBOMER	0.1
B	Glycerol (87% extra pure)	(1)	GLYCERIN	3.0
	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	1.0
	Preservative			q.s.
	Water, demineralised		AQUA (WATER)	75.9
C	Sodium hydroxide solution,	(1)	SODIUM HYDROXIDE	q.s.

10%

Preparation:

Phases A and B are warmed separately to 80°C. Phase B is then added to phase A with stirring and homogenised. The mixture is subsequently neutralised using sodium hydroxide solution and cooled with stirring.

Notes:

pH (20°C): 5.90

Viscosity (26°C): 24,000 mPa.s (Brookfield RVT, spindle C, 5 rpm, Helipath)

SPF (Diffey method): 8

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck-KGaA/Rona®~~

(2) Degussa-Goldschmidt AG

(3) Cognis GmbH

(4) BF Goodrich

Example 11 - Lip gloss (W/O)

	Raw material		INCI	
	% by wt.			
A	COLORONA® Imperial Red	(1)	MICA, CI 77891 (TITANIUM DIOXIDE), CI 73360 (D&C RED NO. 30)	5.0
	OXYNEX® K liquid	(1)	PEG-8, TOCOPHEROL, ASCORBYL PALMITATE, ASCORBIC ACID, CITRIC ACID	0.1
	Magnesium stearate	(1)	MAGNESIUM STEARATE	1.5
	Sisterna A 10E-C	(2)	SUCROSE TETRASTEARATE TRIACETATE	15.0
	Castor oil	(3)	RICINUS COMMUNIS (CASTOR OIL)	55.3
	Aerosil R 972	(4)	SILICA	1.0
	Rubis Covapate W 4765	(5)	RICINUS COMMUNIS (CASTOR OIL), CI 15850 (D&C RED NO. 7 CALCIUM LAKE)	0.2
	Tendresse 75418C perfume oil	(6)	PARFUM	0.2
B	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	1.0
	Glycerol (87% extra pure)	(1)	GLYCERIN	5.0
	Magnesium sulfate heptahydrate	(1)	MAGNESIUM SULFATE	0.7

Water, demineralised		AQUA (WATER)	15.0
Preservative			q.s.

Preparation:

The dye is stirred into castor oil. The remaining ingredients are subsequently incorporated, and the mixture is heated to 75-80°C. Phase B is mixed and warmed to 75-80°C. Phase B is then added to phase A with stirring, homogenised and cooled to room temperature with stirring.

Notes:

Viscosity (24°C): 350,000 mPa.s (Brookfield RVT, spindle D, 5 rpm, Helipath)

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~
(2) Sisterna C. V.
(3) Henry Lamotte GmbH
(4) Degussa AG
(5) Les Colorants Wackherr
(6) Haarmann & Reimer GmbH

Example 12 – Body milk (W/O)

	Raw material		**INCI**	
	% by wt.			
A	Liquid paraffin	(1)	PARAFFINUM LIQUIDUM (MINERAL OIL)	8.0
	OXYNEX® K liquid	(1)	PEG-8, TOCOPHEROL, ASCORBYL PALMITATE, ASCORBIC ACID, CITRIC ACID	0.05
	Dragosan W/O	(2)	SORBITAN ISOSTEARATE, HYDROGENATED CASTOR OIL, CERESIN, CERA ALBA, PARAFFINUM LIQUIDUM	1.5
	Olive oil refined	(3)	OLEA EUROPAEA	5.0
	Isopropyl palmitate	(4)	ISOPROPYL PALMITATE	5.0
	Coconut oil refined	(3)	COCOS NUCIFERA	1.0
	Dow Corning 200 fluid (350 cs)	(5)	DIMETHICONE	3.0
	Vaseline	(6)	PETROLATUM	1.0
B	Water, demineralised		AQUA (WATER)	68.25
	Glycerol (87% extra pure)	(1)	GLYCERIN	5.5

	Magnesium sulfate heptahydrate	(1)	MAGNESIUM SULFATE	0.7
	RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	1.0
	Preservative			q.s.
C	Perfume oil		PARFUM	q.s.

Preparation:

Phase A and phase B are warmed separately to 80°C. Phase B is then incorporated into phase A with homogenisation. The mixture is cooled to 65°C with stirring and re-homogenised. The mixture is perfumed with phase C at 35°C.

Notes:

Viscosity: 14,900 mPa.s (Brookfield RVT, spindle C, 10 rpm, Helipath), 25°C.

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona~~®
(2) Dragoco Gerberding & Co. AG
(3) Gustav Heess GmbH
(4) Cognis GmbH
(5) Dow Corning
(6) Schümann Sabol

Example 13 - Lip fix

Raw material		**INCI**	
% by wt.			
RONACARE™ ~~RonaCare™~~ ectoin	(1)	ECTOIN	0.5
Ethanol 96% extra pure	(1)	ALCOHOL	70.0
Ethocel	(2)	ETHYLCELLULOSE	1.0
RONACARE™ ~~RonaCare™~~ CPC	(1)	CETYLPYRIDINIUM CHLORIDE	0.15
Water, demineralised		AQUA (WATER)	28.35

Preparation:

The ethanol, water and RONACARE™ ~~RonaCare™~~ CPC are initially introduced, and the thickener is scattered in with stirring. The mixture is stirred until a clear solution is formed, and the RONACARE™ ~~RonaCare™~~ ectoin is added and dissolved with stirring.

Notes:

pH: 6.20 (23°C)

Sources of supply:

(1) MERCK KGAA/RONA® ~~Merck KGaA/Rona®~~

(2) Dow Chemical

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Brief Description of Drawings:

Figure 1: UVA-induced second messenger release in keratinocytes after pretreatment with ectoin for 24 hours.

Figure 2: Ectoin- and UVA-induced AP-2 activation

Figure 3: Inhibition of UVA-induced ICAM-1 gene expression by ectoin

Figure 4: Effect of ectoin on the UVA-induced formation of mt-DNA mutations